

REMARKS**Response to Claim Rejections Under 35 USC §112**

Claim 61 was rejected by the Examiner under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants have amended this claim to obviate this rejection

Response to Claim Rejections Under 35 USC §103

Claims 68, 69, 71, 72 and 77 were rejected by the Examiner under 35 U.S.C. §103(a) as being unpatentable over Panescu et al. (U.S. Pat. No. 5,769,847) in view of Nashef et al. (U.S. Pat. 5,682,899). Claims 61-63, 70, and 73-76 were rejected by the Examiner under 35 U.S.C. §103(a) as being unpatentable over Panescu et al. ('847) in view of Nashef et al. ('899) as detailed supra, and further in view of Littman et al. (U.S. Pat. No. 5,509,411).

Applicants have amended the above rejected claims to clarify the point that the band is secured to the temperature sensor is configured to engage adjacent tissue and to facilitate detecting tissue temperature adjacent to the band. The cited references fail to teach these features. Specifically, the band described in Nashef et al. is not configured to engage tissue adjacent to the band. Instead, the band of Nashef et al. engages fluid passing by the band and is configured to dissipate heat generated by the sensor 20. The sensor 20 of Nashef et al. apparently contacts fluid through an opening in the band, so the band does not facilitate detecting the temperature. The combination of references proposed by the Examiner fails to support the rejection of the aforementioned claims.

Response to Allowable Subject Matter


Applicants' note with appreciation the Examiner's allowance of Claims 1-52, 54-60, and 64-67.

Conclusions

Applicants believe that all of the pending claims are directed to patentable subject matter. Reconsideration and an early allowance thereof are requested. .

Respectfully submitted,

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**Status And Support For All Claims Not Found In Issued Patent
And Amendments Thereto Pursuant To 37 CFR §1.173(c)**

| Claims | Status | Support (Ref. to Issued Patent) |
|----------|----------|---------------------------------|
| Claim 1 | Original | |
| Claim 2 | Original | |
| Claim 3 | Original | |
| Claim 4 | Original | |
| Claim 5 | Original | |
| Claim 6 | Original | |
| Claim 7 | Original | |
| Claim 8 | Original | |
| Claim 9 | Original | |
| Claim 10 | Original | |
| Claim 11 | Original | |
| Claim 12 | Original | |
| Claim 13 | Original | |
| Claim 14 | Original | |
| Claim 15 | Original | |
| Claim 16 | Original | |
| Claim 17 | Original | |
| Claim 18 | Original | |
| Claim 19 | Original | |
| Claim 20 | Original | |
| Claim 21 | Original | |
| Claim 22 | Original | |
| Claim 23 | Original | |
| Claim 24 | Original | |
| Claim 25 | Original | |
| Claim 26 | Original | |
| Claim 27 | Original | |
| Claim 28 | Original | |
| Claim 29 | Original | |
| Claim 30 | Amended | |

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8154-1

| Claims | Status | Support (Ref. to Issued Patent) |
|----------|--------------------|---|
| Claim 31 | Amended | |
| Claim 32 | Amended | |
| Claim 33 | Original | |
| Claim 34 | Original | |
| Claim 35 | Original | |
| Claim 36 | Twice Amended | |
| Claim 37 | Original | |
| Claim 38 | Pending | |
| Claim 39 | Pending | |
| Claim 40 | Pending | |
| Claim 41 | Pending | |
| Claim 42 | Pending | |
| Claim 43 | Pending | |
| Claim 44 | Pending | |
| Claim 45 | Pending | |
| Claim 46 | Pending | |
| Claim 47 | Pending | |
| Claim 48 | Pending | |
| Claim 49 | Pending | |
| Claim 50 | Pending | |
| Claim 51 | Pending | |
| Claim 52 | Pending | |
| Claim 53 | Pending | |
| Claim 54 | Pending | |
| Claim 55 | Pending | |
| Claim 56 | Pending | |
| Claim 57 | Pending | |
| Claim 58 | Pending | |
| Claim 59 | Pending | |
| Claim 60 | Pending | |
| Claim 61 | Four Times Amended | Col. 6, lines 41-47, Col. 5, lines 40-46, Col. 2, lines 20-25 and 58-62 |
| Claim 62 | Thrice Amended | Col. 6, lines 41-47, Col. 5, lines 40-46, Col. 2, lines 20-25 and 58-62 |

| Claims | Status | Support (Ref. to Issued Patent) |
|----------|--------------------|---|
| Claim 63 | Four Times Amended | Col. 6, lines 41-47, Col. 5, lines 40-46, Col. 2, lines 20-25 and 58-62 |
| Claim 64 | Pending | |
| Claim 65 | Pending | |
| Claim 66 | Pending | |
| Claim 67 | Pending | |
| Claim 68 | Thrice Amended | Col. 6, lines 41-47, Col. 5, lines 40-46, Col. 2, lines 20-25 and 58-62 |
| Claim 69 | Twice Amended | |
| Claim 70 | Thrice Amended | Col. 6, lines 41-47, Col. 5, lines 40-46, Col. 2, lines 20-25 and 58-62 |
| Claim 71 | Thrice Amended | Col. 6, lines 41-47, Col. 5, lines 40-46, Col. 2, lines 20-25 and 58-62 |
| Claim 72 | Pending | |
| Claim 73 | Thrice Amended | Col. 6, lines 41-47, Col. 5, lines 40-46, Col. 2, lines 20-25 and 58-62 |
| Claim 74 | Pending | |
| Claim 75 | Pending | |
| Claim 76 | Pending | |
| Claim 77 | Thrice Amended | Col. 6, lines 41-47, Col. 5, lines 40-46, Col. 2, lines 20-25 and 58-62 |

Mark-Up of Amended Claims

61. (Four Times Amended) An electrophysiology device, comprising:
- a) an elongated shaft having a proximal end, a distal end, a distal shaft section with a proximal portion and a distal portion and a wall portion defining at least in part an inner lumen extending within the distal shaft section;
 - b) an elongated core member disposed within the inner lumen;
 - c) a plurality of electrodes on the proximal portion of the distal shaft section, having an interelectrode spacing of about 1 mm to not greater than 3 mm;
 - d) a plurality of electrical ~~conductor~~ conductors which are at least partially embedded within a wall of the elongated shaft, and which have distal ends electrically connected to ~~[[an]]~~ one of the electrode electrodes on the proximal shaft portion; and
 - e) at least one temperature sensor on an exterior portion of the distal shaft section which is disposed between two adjacent electrodes and which has a conductive metallic band disposed over and connected to the sensor that is configured to engage tissue adjacent to the band and to facilitate detecting tissue temperature adjacent to the band ~~connected to the temperature sensor.~~
62. (Thrice Amended) An electrophysiology device, comprising:
- a) an elongated shaft having a proximal end, a distal end, a distal shaft section with a proximal portion and a distal portion and a wall portion

defining at least in part an inner lumen extending within the distal shaft section;

- b) a plurality of electrodes on the proximal portion of the distal shaft section, having an interelectrode spacing of about 1 mm to not greater than 3 mm;
- c) at least one temperature sensor on an exterior portion of the distal shaft section disposed between two adjacent electrodes and having a conductive metallic band disposed over and connected to the sensor which is configured to engage tissue adjacent to the band and to facilitate detection of tissue temperature adjacent to the band ~~connected to the sensor~~; and
- d) at least one electrical conductor which is at least partially embedded within a wall of the elongated shaft, and which has a distal end electrically connected to the at least one temperature sensor on the proximal shaft portion.

63. (Four Times Amended) An electrophysiology device, comprising:

- a) an elongated shaft having a proximal end, a distal end, a distal shaft section with a proximal portion and a distal portion and a wall portion defining at least in part an inner lumen extending within the distal shaft section;
- b) a plurality of partially covered electrodes on the proximal portion of the distal shaft section;
- c) at least one temperature sensor on an exterior portion of the distal shaft section disposed between two adjacent electrodes and having a

conductive metal band disposed over and connected to the at least one temperature sensor, ~~which is the band being~~ configured to engage tissue adjacent to the band and to facilitate detection of tissue temperature adjacent to the band connected to the temperature sensor;

- d) at least one electrical conductor which has a distal end electrically connected to the at least one temperature sensor on the proximal shaft portion; and
- e) a core member disposed in the distal shaft section.

68. (Thrice Amended) A method for treating a patient, comprising:

- a) the step of providing an electrophysiology device, comprising:
 - an elongated shaft having a proximal end, a distal end, and a distal shaft section, and a plurality of electrical conductors;
 - a plurality of electrodes on an exterior portion of the distal shaft section electrically connected to the electrical conductors, having an interelectrode spacing of not more than about 3 mm;
 - a plurality of temperature sensors on an exterior portion of the distal shaft section, being positioned so that at least one temperature sensor is disposed between two adjacent electrodes, each temperature sensor being electrically connected to at least one of the electrical conductors and having a conductive metallic band disposed over and connected to the sensor, ~~the band being which is~~ configured to engage tissue adjacent to the band and to facilitate detection of

tissue temperature adjacent to the band ~~connected to the~~
~~temperature sensor;~~

- b) the step of introducing the device into the patient's vasculature and advancing the device until the distal section of the device is disposed at a desired location;
- c) the step of positioning the device within a location of the patient's vasculature where one or more electrodes are in contact with a desired surface within the vasculature;
- d) the step of delivering high frequency electrical energy to the one or more electrodes in contact with the desired surface to ablate tissue; and
- e) the step of detecting electrical activity with one or more of the electrodes after tissue ablation to determine the effectiveness of the tissue ablation.

70. (Thrice Amended) An electrophysiology device for forming a continuous lesion in a patient's heart tissue, comprising:

- a) an elongated shaft having a proximal end, a distal end, and a distal shaft section;
- b) a plurality of partially covered electrodes on a proximal portion of the distal shaft section, with each electrode having a length of about 2 to about 8 mm and interelectrode spacing of about 1 mm to not greater than 3 mm;
- c) at least one temperature sensor disposed between two adjacent electrodes and having a conductive metallic band disposed over and connected to the sensor, the band being which is configured to engage

tissue adjacent to the band and to facilitate detection of tissue temperature adjacent to the band ~~connected to the temperature sensor~~; and

- d) one or more electrical conductors electrically connected to the at least one temperature sensor.

71. (Thrice Amended) A method of treating a patient for cardiac arrhythmia by electrically isolating a first tissue region from a second tissue region, comprising:

- a) providing an electrophysiology device having an elongated shaft which has a proximal end, a distal shaft section having a proximal portion with a plurality of electrodes with temperature sensors between adjacent electrodes having conductive metal bands disposed over and connected to the sensors, the bands being which are configured to engage tissue adjacent to the band and to facilitate detection of tissue temperature adjacent to the bands ~~connected to the temperature sensors~~ and the distal shaft section having a distal portion with a distal end;
- b) positioning the proximal portion of the distal shaft section at a desired location between the first tissue region and the second tissue region;
[[and]]
- c) ablating a continuous lesion pattern between the first and second tissue regions with the electrodes on the proximal portion of the distal shaft section to electrically isolate the two tissue regions; and
- d) monitoring tissue temperature adjacent to the bands with the temperature sensors.

73. (Thrice Amended) An electrophysiology device for treating cardiac arrhythmia by electrically isolating a first tissue region from a second tissue region, comprising:

- a) an elongated shaft having a proximal end, a distal end, and a distal shaft section with a proximal portion and a distal portion;
- b) a plurality of electrodes on the proximal portion of the distal shaft section, having an interelectrode spacing not greater than 3 mm;
- c) at least one temperature sensor on the distal shaft section disposed between two adjacent electrodes and having a conductive metallic band extending over and connected to the sensor, the band being which is configured to engage tissue adjacent to the band and to facilitate detection of tissue temperature adjacent to the band connected to the temperature sensor; and
- d) a core member extending at least within the distal shaft section formed of a material selected from the group consisting of stainless steel and a NiTi alloy.

77. (Thrice Amended) An electrophysiology device, comprising:

- a) an elongated shaft having a proximal end, a distal end, and a distal shaft section with a proximal portion and a distal portion;
- b) a plurality of electrode means for ablation on the proximal portion of the distal shaft section, having a spacing between electrode means of about 1 mm to not greater than 3 mm;
- c) at least one temperature sensor on an exterior portion of the distal shaft

section disposed between two adjacent electrode means and having a conductive metallic band disposed over and connected to the sensor, the band being which is configured to engage tissue adjacent to the band and to facilitate detection of tissue temperature adjacent to the band ~~connected to the temperature sensor~~; and

- d) an elongated core member in the distal shaft section.